

Notice of Allowability

Application No.

09/993,092

Examiner

Devona E. Faulk

Applicant(s)

WILDHAGEN, JENS

Art Unit

2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed 3/20/2006.
2. ☒ The allowed claim(s) is/are 1,4,5,9-13,15-23,25 and 26.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 3/20/2006 have been fully considered but they are not persuasive.

Regarding claim 1, the applicant asserts that prior art Ishida fails to teach or suggest a frequency selective stereo to mono blending based on the masking effect of the human auditory system. The examiner asserts that prior art Ishida was cited for a frequency selective stereo to mono blending (Figure 3) because Ishida discloses dividing the stereo difference signals into sub-bands (column 2, lines 62-66) and teaches of reproducing a stereo signal so that a noise component can be eliminated over the entire frequency band, having a natural stereo sense (column 10, lines 57-62). Prior art Druyvesteyn was cited for disclosing that dividing an audio signal band into a plurality of sub-bands whose bandwidths approximately correspond with the bandwidths of the critical bands of the human auditory system and masking effect is well known in the art (column 4, lines 43-55). It would have been obvious to modify Ishida by dividing the stereo difference signals into sub-bands with bandwidths that correspond to the critical bands of the human auditory system in order to make noise inaudible to the human auditory system (column 4, line 43). Prior art Short teaches of using noise included in the stereo audio signal as a probe signal and an audio component of the audio signal as a mask signal (column 2, lines 22-26). The prior art and combination thereof meets the claim language.

2. The applicant agreed to an examiner's amendment to put claim 1 in allowable form by adding the claim language of claims 6-8. Claim 8 was objected to in the previous office action.
3. Claims 15-23 were indicated as allowable and remain in allowable form.
4. Claims 2,3,14 and 24 are cancelled.

EXAMINER'S AMENDMENT

5. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Bradley D Lytle (Reg. 40,073) on April 20,2006.

The claims are to be amended as follows:

CLAIMS:

Claims 6-8: Cancel.

Claim 1, line 1: after "stereo", insert - - audio - -.

Claim 1, line 6: before "audio", insert - - stereo - -.

Claim 1, line 6: after "blending", delete "." and insert - -, wherein every subband of the stereo difference signal which noise component lies above a signal component of a subband of the stereo audio signal corresponding to that of the stereo difference

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signal is attenuated so that the noise component of the subband of the stereo difference lies below the respective absolute value of masking, and

wherein an attenuation factor of a respective subband is determined by dividing the signal component corresponding to the subband of the stereo audio signal by the noise component of the subband of the stereo difference signal, the attenuation factor of a respective subband is limited to values between 0 and 1. —.

6. Claims 1,4,5,9-13,15-23,25 and 26 are allowed.

7. The following is an examiner's statement of reasons for allowance:

Regarding claim 1, .Prior art Ishida discloses a frequency selective stereo to mono blending (Figure 3) because Ishida discloses dividing the stereo difference signals into sub-bands (column 2, lines 62-66) and teaches of reproducing a stereo signal so that a noise component can be eliminated over the entire frequency band, having a natural stereo sense (column 10 , lines 57-62). Prior art Druyvesteyn was cited for disclosing that dividing an audio signal band into a plurality of sub-bands whose bandwidths approximately correspond with the bandwidths of the critical bands of the human auditory system and masking effect is well known in the art (column 4, lines 43-55). It would have been obvious to modify Ishida by dividing the stereo difference signals into sub-bands with bandwidths that correspond to the critical bands of the human auditory system in order to make noise inaudible to the human auditory system (column 4, line 43). Prior art Short teaches of using noise included in the stereo audio signal as a probe signal and an audio component of the audio signal as a mask signal (column 2, lines 22-26). The prior art or combination thereof fails to

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disclose wherein an attenuation factor of a respective subband is determined by dividing the signal component corresponding to the subband of the stereo audio signal by the noise component of the subband of the stereo difference signal, the attenuation factor of a respective subband is limited to values between 0 and 1. Therefore, the prior art or combination thereof fails to disclose or make obvious a method to denoise a stereo audio signal as claimed.

Claims 4,5,9-13 are allowable due to dependency on claim 1.

See above response to arguments regarding claims 15-23 and 25,26.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Devona E. Faulk whose telephone number is 571-272-7515. The examiner can normally be reached on 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848.

The Art Unit location of your application in the USPTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Art Unit 2615. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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